

6c



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,723	12/18/2001	Jeffrey Scott Hepburn	198-1276	2242
22844	7590	10/04/2005	EXAMINER	
FORD GLOBAL TECHNOLOGIES, LLC. SUITE 600 - PARKLANE TOWERS EAST ONE PARKLANE BLVD. DEARBORN, MI 48126			TRAN, BINH Q	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/025,723

Applicant(s)

HEPBURN ET AL.

Examiner

BINH Q. TRAN

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10-18 is/are rejected.
- 7) ☒ Claim(s) 8-9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This office action is in response to the amendment filed July 13, 2005.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

***Claims 1-7, and 10-18 are rejected under 35 U.S.C. 102 (b) as being anticipated by Hirota et al. (Hirota) (Patent Number 6,233,925).***

Regarding claims 1, 10-11, and 15, Hirota discloses a system and method for controlling a temperature of an emission control device (e.g. 11, 80) receiving exhaust gases from an engine (1), the device (e.g. 11, 80) being coupled adjacent and downstream of an oxidation catalyst (80), said system comprising: a reductant valve (e.g. 124, 126) selectively supplying reductant to said exhaust gases responsive to a first signal; a throttle valve (e.g. 117, 21) controlling flow of said exhaust gases to said oxidation catalyst responsive to a second signal; and a controller (20) operably connected to said reductant valve and said throttle valve, said controller generating said first and second signals to control a mixture of said exhaust gases and said reductant flowing into said

Art Unit: 3748

oxidation catalyst to control a temperature of said emission control device (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

Regarding claims 2 and 16, Hirota further discloses that the temperature is controlled while said mixture is rich of stoichiometry and NO<sub>x</sub> is being removed from said emission control device (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

Regarding claims 3 and 17, Hirota further discloses that the temperature is controlled while said mixture is rich of stoichiometry and SO<sub>x</sub> is being removed from said emission control device (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

Regarding claims 4 and 18, Hirota further discloses that the temperature is controlled while said mixture is lean of stoichiometry and said emission control device is oxidizing particulate matter (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

Regarding claim 5, Hirota further discloses that the step of indicating when NO<sub>x</sub> needs to be removed from said emission control device (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

Regarding claim 6, Hirota further discloses that the step of indicating when SO<sub>x</sub> needs to be removed from said emission control device (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

Regarding claim 7, Hirota further discloses that the step of indicating when particulate matter needs to be removed from said emission control device (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

Regarding claim 12, Hirota further discloses that the emission control device comprises a NO<sub>x</sub> trap (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

Art Unit: 3748

Regarding claim 13, Hirota further discloses that the emission control device comprises a combined NO<sub>x</sub> trap-particulate filter (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

Regarding claim 14, Hirota further discloses that the a temperature sensor (28) generating a third signal indicative of a temperature in said oxidation catalyst, said third signal being received by said controller (e.g. See col. 20, lines 31-67; cols. 21-22, lines 1-67; col. 23, lines 1-47).

#### ***Allowable Subject Matter***

Claims 8-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

#### ***Response to Arguments***

Applicant's arguments filed July 13, 2005 have been fully considered but they are not completely persuasive. ***Claims 1-18 are pending.***

Applicant's cooperation in explaining the claims subject matter more specific to overcome the claim rejection is appreciated.

Applicants have argued that Hirota does not teach or suggest Applicants's claimed invention. More specifically, Applicants assert that the reference to Hirota fails to disclose an oxidation catalyst. The examiner respectfully disagrees, in column 20, lines 30-43, Hirota has clearly disclosed that *"FIG. 20 shows the constitution of important parts of an exhaust discharge control device in a seventh embodiment. The exhaust discharge control device in this embodiment is based on the constitution of the preceding embodiments and provided with an S trap 80 upstream of a catalytic converter 11. To be specific, the S trap 80 is disposed between exhaust pipes 18a and 18b connecting the third port of an exhaust directional control valve 120 and an inlet 11a of the catalytic converter 11. An S trap material 81 formed of an occluding and reducing type NOx catalyst having high SOx absorbing capability (SOx absorbent) 81 is housed in the S trap 80."* In addition, in column 6, lines 1-52, Hirota has also disclosed *"It has not been clarified why NOx or SOx is well purified in the presence of oxygen in the NOx absorbent 10 while the air-fuel ratio of the exhaust gas flowing into the NOx absorbent 10 is rich. The reasons might be as follows. Even if the air-fuel ratios of the gas mixtures burned in the respective cylinders are lean in the normal operation, the exhaust gases discharged from the cylinders contain HC. Some of HC is oxidized in the NOx absorbent 10 and the remaining HC is adhered onto the surface of catalyst particulates, such as platinum Pt particles without being oxidized. Also, if NOx or SOx is discharged from the NOx absorbent 10, the air-fuel ratio of the exhaust gas flowing into the NOx absorbent 10 is made rich as sated above. .... Meanwhile, if oxygen exists in the NOx absorbent 10 while the air-fuel ratio of the gas mixture burned in each of the cylinders to discharge NOx or SOx from the NOx absorbent 10 is set at a stoichiometric air fuel ratio, oxidization reaction locally occurs around platinum Pt. At this*

Art Unit: 3748

moment, since the temperature of the exhaust gas flowing into the NOx absorbent 10 is increased in comparison with that in normal operation, the temperature of NOx absorbent 10 rises accordingly, with the result that HC and CO on the platinum Pt surface are further oxidized with oxygen. HC and CO are, thereby, removed from the platinum Pt surface, ensuring good NOx or SOx purification action of the NOx absorbent 10. Alternatively, if the air-fuel ratios of the gas mixtures burned in the respective cylinders are made rich, HC and CO in the exhaust gas flowing into the NOx absorbent 10 react with oxygen on the surface of, for example platinum. As a result, the surrounding of the platinum Pt is locally heated to accelerate the reaction of HC and CO adhered onto the platinum Pt surface with oxygen, thereby removing HC and CO from the platinum Pt surface. In either case, if HC is removed from the platinum Pt surface, it is reformed to a reducing agent effective for NOx or SOx. This makes it possible to further ensure that NOx or SOx discharged from the NOx absorbent 10 is reduced by the reducing agent.”.

It is well understood in the art that “S trap material 81 formed of an occluding and reducing type NOx catalyst having high SOx absorbing capability” is also oxidation NOx in the exhaust gas of the internal combustion engine.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

Art Unit: 3748

calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT  
September 30, 2005



Binh Q. Tran  
Patent Examiner  
Art Unit 3748